CLAIMS

WHAT IS CLAIMED IS:

5   1.   A method for producing profile data relating to information of a cell in a consistent environment, said method comprising the steps of:

a) locating a plurality of cells to a support which is capable of maintaining the cells in a consistent
10   environment; and b) monitoring a biological agent or a collection thereof on or in the cell to produce the profile data for the cell.

2.   A method according to Claim 1, wherein the biological
15   agent is a nucleic acid molecule or a molecule derived from the nucleic acid molecule.

3.   A method according to Claim 1, wherein the cell is immobilized to the support by a composition comprising a)
20   a complex with a positively charged substance and a negatively charged substance; and b) a salt.

4.   A method according to Claim 1 wherein the cell is provided with an actin-like substance.
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5.   A method according to Claim 1, wherein the cell is immobilized to the support by a composition comprising a) a complex with a positively charged substance and a negatively charged substance; and b) a salt, and is provided
30   with an actin-like acting substance.

6.   A method according to Claim 1 wherein the biological agent is selected from the group consisting of a nucleic acid molecule, a protein, a saccharide, a lipid, a low molecular weight molecule, and a complex thereof.

7.   A method according to Claim 1, wherein the cell is cultured at least about three days before the step of monitoring.

8.   A method according to Claim 1, wherein the biological agent comprises a nucleic acid molecule encoding a gene.

9.   A method according to Claim 1, wherein the profile comprises a profile for gene expression.

10.   A method according to Claim 1, wherein the profile comprises a profile of an apoptosis signal.

11.   A method according to Claim 1 wherein the profile is a profile of a stress signal.

12.   A method according to Claim 1 wherein the profile is a profile of the localization of a molecule.

13.   A method according to Claim 12 wherein the molecule is detected by means selected from the group consisting of fluorescence, phosphorescence, radioactivity, and a combination thereof.

14.   A method according to Claim 1 wherein the profile comprises a variation in cell morphology.

15.   A method according to Claim 1 wherein the profile
5   comprises a profile of promoter activity.

16.   A method according to Claim 1, wherein said profile comprises a profile of a promoter dependent on a specific drug.
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17.   A method according to Claim 1 wherein said profile comprises a profile of a promoter dependent on a specific drug, wherein said method further comprises the step of administering the specific drug.
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18.   A method according to Claim 1 further comprising the step of subjecting the cell to a foreign agent.

19.   A method according to Claim 18, wherein said foreign
20   agent comprises an RNAi.

20.   A method according to Claim 18, wherein said foreign agent comprises a chemical not present in a biological body.

25   21.   A method according to Claim 1, wherein said profile comprises a profile of an intermolecular interaction.

22.   A method according to Claim 18, wherein said foreign agent comprises a ligand for a receptor of said cell.
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23. A method according to Claim 1, wherein said profile comprises a profile of an interaction between a receptor and a ligand.

5 24. A method according to Claim 1, wherein said profile is of a cellular form, and said method further comprises the step of giving to said cell a stimulus selected from the group consisting of overexpression, underexpression or knockdown of a gene, addition of a foreign agent and a change

10 in the environment.

25. A method according to Claim 1, wherein said profile comprises a profile of interaction between molecules present in said cell.

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26. A method according to Claim 1, further comprising the step of conducting observation using a technology selected from the group consisting of two-hybrid method, FRET and BRET.

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27. A method according to Claim 1, wherein said profile comprises a profile of interaction between molecules present in said cell, wherein the method further comprises the step of conducting observation using a technology selected from

25 the group consisting of two-hybrid method, FRET and BRET.

28. A method according to Claim 1, wherein said cell is located on said support in an array format.

30 29. A method according to Claim 1, wherein said cell is

located on said support in an array format, and each of said plurality of cells are located at a space of 1 mm at maximum.

30. A method according to Claim 1, wherein said profile is obtained in real time.

31. A method according to Claim 1 further comprising the step of immobilizing said cell to a solid support.

32. A method according to Claim 1, wherein said data comprises information relating to said profile.

33. A method according to Claim 1 wherein said data comprises information relating to conditions during said monitoring.

34. A method according Claim 1 wherein said data comprises information relating to the state of said cell.

35. A method according to Claim 1 wherein said biological agent to be monitored comprises at least two types of biological agent.

36. A method according to Claim 1 wherein said biological agent to be monitored comprises at least three types of biological agent.

37. A method according to Claim 1 wherein said biological agent to be monitored comprises at least eight types of biological agents.

38.   A method according to Claim 1 further comprising the step of arbitrarily selecting a biological agent.

5   39.   A method according to Claim 1 wherein said cell is selected from the group consisting of a stem cell and a somatic cell.

40.   A method according to Claim 1 wherein said support

10   comprises a solid support.

41.   A method according to Claim 1 wherein said support comprises a substrate.

15   42.   A method according to Claim 1 wherein said biological agent is a nucleic acid molecule, and said cell is transfected with said nucleic acid molecule.

43.   A method according to Claim 42, wherein said

20   transfection is conducted on a solid phase or in a liquid phase.

44.   A method according to Claim 42, wherein said transfection is conducted on a solid support.

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45.   A method according to Claim 1, further comprising the step of comparing a phase of said profile.

46.   A method according to Claim 1, further comprising the

30   step of subtracting a control profile from the profile of

said cell.

47.   A method according to Claim 1 further comprising the step of processing the profile with a mathematical

5   processing method from signal processing and multivariant analysis methods.

48.   A method for presenting profile data relating to information of a cell in a consistent environment,

10   comprising the steps of:

a) locating a plurality of cells on a support which is capable of maintaining the cells in a consistent environment;

b) monitoring a biological agent or a collection

15   thereof on or in the cell to produce the profile data for the cell; and

c) presenting the data.

49.   A method according to Claim 48, wherein said step of

20   presenting is conducted in real-time.

50.   A method according to Claim 48, wherein said step of presenting is conducted such that visual detection is enabled.

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51.   A method according to Claim 48, wherein said step of presenting is conducted such that auditory detection is enabled.

30   52.   A method for determining the state of a cell in a

consistent environment, comprising the steps of:

a) locating a plurality of cells on a support which is capable of maintaining the cells in a consistent environment; b) monitoring a biological agent or a collection thereof on or in the cell to produce the profile data for the cell; and

c) determining the state of said cell from said data.

53. A method according to Claim 52, further comprising the step of correlating said profile and the state of said cell in advance.

54. A method according to Claim 52, wherein said cell comprises a cell for which the state thereof is known.

55. A method according to Claim 52, wherein there are at least two types of said biological agent.

56. A method according to Claim 52, further comprising the step of arbitrarily selecting said biological agent.

57. A method according to Claim 52, wherein said data is produced in real-time.

58. A method according to Claim 52, wherein said status is selected from the group consisting of differentiation state, undifferentiation state, cellular response to a foreign agent, cellular cycle and growth state.

59. A method according to Claim 52, wherein said cell is

selected from the group consisting of a stem cell and a
somatic cell.

60.   A method according to Claim 52, wherein said solid
5   support comprises a substrate.

61.   A   method   according   to   Claim   52,   wherein   said
biological agent is a nucleic acid molecule, and said cell
is transfected with said nucleic acid molecule.
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62.   A method   according   to   Claim   61,   wherein   said
transfection is conducted on a solid phase or in a liquid
phase.

15   63.   A   method   according   to   Claim   52,   wherein   said
biological agent has the capability of binding a different
biological agent.

64.   A method according to Claim 52, wherein said step of
20   determination c) comprises comparing the phases of said
profile.

65.   A method according to Claim 52, wherein said step of
determination c) comprises obtaining the difference between
25   said profile and a control profile.

66.   A method according to Claim 52, wherein said step of
determination c) comprises a mathematical processing method
selected from the group consisting of signal processing and
30   multivariate analysis methods.

67.   A method for correlating a foreign agent and a cellular response to the foreign agent, comprising the steps of:

    .   a) subjecting a cell to a foreign agent on a support
5 capable of maintaining a plurality of cell in a consistent environment;

        b) monitoring a biological agent or a collection thereof on or in the cell to produce the profile data for the cell; and

10   c) correlating the foreign agent and the profile.

68.   A method according to Claim 68, wherein said cell is immobilized on said support.

15 69.   A method according to Claim 69, further comprising the step of using at least two of said foreign agents to obtain profiles of each of the foreign agents.

70.   A method according to Claim 67, further comprising the
20 step of classifying at least two of said profiles to classify foreign agents corresponding to the profiles.

71.   A method according to Claim 70, wherein said profile is presented in real-time.
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72.   A method according to Claim 67, wherein said cell is cultured on an array.

73.   A method according to Claim 67, wherein the monitoring
30 of said profile in step (b) comprises obtaining image data

from said array.

74. A method according to Claim 67, wherein said correlation between said foreign agent and said profile in step (c) is a step of identifying the identity or difference of the phase of said profile.

75. A method according to Claim 67, wherein said foreign agent is selected from the group consisting of temperature changes, humidity changes, electromagnetic wave, potential difference, visible light, infrared light, ultraviolet light, X-rays, chemical substances, pressure, gravity changes, gas partial pressure and osmotic pressure.

76. A method according to Claim 75, wherein said chemical substance is a biological molecule, a chemically synthesized substance or a culture medium

77. A method according to Claim 76, wherein said biological molecule is selected from the group consisting of a nucleic acid, a protein, a lipid, a sugar, a proteolipid, a lipoprotein, a glycoprotein and a proteoglycan.

78. A method according to Claim 76, wherein said biological molecule comprises at least one biological molecule selected from the group consisting of a hormone, a cytokine, a cell adhesion factor and a extracellular matrix protein.

79. A method according to Claim 75, wherein said chemical

substance is an agonist or antagonist of a receptor.

80.   A method for identifying an unidentified foreign agent
given to a cell, from the profile of said cell, comprising
5   the steps of:

a)   subjecting   a   cell   on   a   support   capable   of
maintaining a plurality of cell in a consistent environment
to a plurality of known foreign agents;

b)   monitoring   a   biological   agent   or   a   collection
10   thereof on or in the cell over time to produce the profile
data for the cell in response to each of known foreign agents
to produce profile data for the cell;

c)   correlating each of the known foreign agents and
each of the profiles;

15   d)   subjecting   the   cell   to   an   unidentified   foreign
agent;

e)   monitoring   a   biological   agent   or   a   collection
thereof on or in the cell subjected to the unknown foreign
agent over time to obtain the profile of the cell relating
20   to the unidentified foreign agent;

f)   determining   the   profile   corresponding   to   the
profile obtained in step e) amongst the profiles obtained
in step b);

g) determining that the unidentified foreign agent is
25   the known foreign agent corresponding to the profile which
has been determined in step f).

81.   A method for identifying an unidentified foreign agent
given to a cell, from the profile of the cell, comprising
30   the steps of:

a) providing data relating to correlation between a known foreign agent, and a profile of the cell corresponding to the known foreign agent, with respect to a biological agent or a collection thereof on or in the cell;

5   b) subjecting the cell to an unidentified foreign agent;

c) monitoring the biological agent or the collection thereof on or in the cell over time to produce a profile of the cell;

10   d) determining the profile corresponding to the profile obtained in step c) amongst the profiles provided in step a); and

e) determining that the unidentified foreign agent is the known foreign agent corresponding to the determined

15   profile.

82.   A method for obtaining a profile relating to information of a cell in a consistent environment, comprising the steps of:

20   a) locating a plurality of cells to a support which is capable of maintaining the cells in a consistent environment; and

b) monitoring a biological agent or a collection thereof on or in the cell over time to produce the profile

25   data for the cell.

83.   A storage medium on which data produced by a method according to Claim 1, is stored.

30   84.   A storage medium according to Claim 83, wherein said

storage medium further comprises data of at least one information relating to one selected from the group consisting of information relating to conditions under said monitoring, information relating to said profile,

5   information relating to the state of said cell and information relating to the biological agent.

85.   A storage medium according to Claim 84, wherein the data is stored in a format which links a plurality of the

10   data to each other.

86.   A storage medium according to Claim 84, wherein the data is stored in a format which has links per said cell.

15   87.   Data produced by a method according to Claim 1.

88.   A transmission medium comprising data produced by a method according to Claim 1.

20   89.   A system for producing profile data relating to information of a cell in a consistent environment, said method comprising:

       a) a support which is capable of maintaining the cells in a consistent environment;

25   b) means for monitoring a biological agent or a collection thereof on or in the cell to produce the profile data for the cell; and

       c) means for producing profile data for the cell from a signal obtained from the means for monitoring.

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90.   A system according to Claim 89, further comprising a plurality of cells, and the plurality of cells are immobilized on to the support.

5   91.   A system according to Claim 90, wherein said support is attached at least one substance selected from the group consisting of a salt and an actin-like acting substance.

92.   A system according to Claim 89, wherein said means for
10 monitoring comprises at least one means selected from the group consisting of optical microscopes, fluorescence microscopes, phase-contrast microscopes, reading devices using a laser source, means using surface plasmon resonance (SPR) imaging, electric signals, chemical or biochemical
15 markers singly or in combination, radiation, confocal microscopes, nonconfocal microscopes, differential interference microscopes, stereoscopic microscopes, video monitors and infrared cameras.

20 93.   A system for presenting profile data relating to information of a cell in a consistent environment, comprising:
        a) a support which is capable of maintaining the cell in a consistent environment;
25   b) means for monitoring a biological agent or a collection thereof on or in the cell to produce the profile data for the cell;
        c) means for producing profile data for the cell from a signal obtained from the means for monitoring; and
30   d) means for presenting the data.

94.   A system according to Claim 93, further comprising a plurality of cells, wherein the plurality of cells are immobilized on to the support.

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95.   A system according to Claim 93, wherein said support is attached at least one substance selected from the group consisting of a salt and an actin-like acting substance.

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96.   A system according to Claim 93, wherein said means for monitoring comprises at least one means selected from the group consisting of optical microscopes, fluorescence microscopes, phase-contrast microscopes, reading devices

15 using a laser source, means using surface plasmon resonance (SPR) imaging, electric signals, chemical or biochemical markers singly or in combination, radiation, confocal microscopes, nonconfocal microscopes, differential interference microscopes, stereoscopic microscopes, video

20 monitors and infrared cameras.

97.   A system according to Claim 93, wherein said means for presenting data is a display.

25 98.   A system according to Claim 93, wherein said means for presenting data is a speaker.

99.   A system for determining the state of a cell in a consistent environment, comprising

30   a) a support which is capable of maintaining the cell

in a consistent environment;

      b) means for monitoring a biological agent or a collection thereof on or in the cell to produce the profile data for the cell;

5   c) means for producing profile data for the cell from a signal obtained from the means for monitoring; and

      d) means for determining the state of said cell from said data.

10   100. A system for correlating a foreign agent and a cellular response to the foreign agent, comprising:

      a) a support capable of maintaining a plurality of cell in a consistent environment;

      b) means for subjecting a foreign agent;

15   c) monitoring a biological agent or a collection thereof on or in the cell to produce the profile data for the cell;

      d) means for producing profile data for the cell from a signal obtained from the means for monitoring; and

20   e) means for correlating the foreign agent and the profile.

101. A system for identifying an unidentified foreign agent given to a cell, from the profile of said cell, comprising:

25   a) a support capable of maintaining a plurality of cell in a consistent environment;

      b) means for subjecting a known foreign agent;

      c) means for monitoring a biological agent or a collection thereof on or in a cell over time;

30   d) means for obtaining the profile data for the cell

in response to each of known foreign agents to produce profile data for the cell;

e) means for correlating each of the known foreign agents and each of the profiles;

5   f) means for subjecting the cells to an unknown foreign agent;

g) means for comparing the profile of the known foreign agent obtained with means d), and the profile of the unknown foreign agent to determine a profile corresponding to the

10   profile of the unknown foreign agent amongst the profiles of the known foreign agents, wherein said determined unidentified foreign agent is the known foreign agent for which the determined profile corresponds to.

15   102.   A system for identifying an unidentified foreign agent given to a cell, from the profile of the cell, comprising:

a) a storage medium having stored data relating to a correlation between a known foreign agent, and a profile of the cell corresponding to the known foreign agent, with

20   respect to a biological agent or a collection thereof on or in the cell;

b) means for subjecting the cell to an unidentified foreign agent;

c) a support which is capable of maintaining a

25   plurality of cells in a consistent environment;

d) means for monitoring the biological agent or the collection thereof on or in the cell over time to produce a profile of the cell;

e) means for obtaining the profile of the cell from

30   a signal obtained from the means for monitoring; and

f) means for determining the profile corresponding to the profile obtained relating to the unidentified foreign agent amongst the profiles stored in the storage medium a), wherein the unidentified foreign agent is the known foreign

5 agent for which the determined profile corresponds to.

103. A support capable of immobilizing a plurality of cells and maintaining the cells in a consistent environment.

10 104. A support according to Claim 103, wherein the cells on the support are located in an array format.

105. A support according to Claim 103 comprising a complex of a positively charged substance and a negatively charged

15 substance; a salt; or an actin-like acting substance.

106. A support according to Claim 103 comprising a complex of a positively charged substance and a negatively charged substance; a salt; and an actin-like acting substance.

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107. A support according to Claim 103, wherein said claim is capable of being located within a space of 1 mm or less at maximum.

25 108. A support according to Claim 103, further comprising a cell immobilized thereon.

109. A support according to Claim 103, further comprising a biological agent immobilized thereon.

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110. A support according to claim 109, wherein two or more types of said biological agent are immobilized thereon.

111. A support according to Claim 103, wherein a cell and a biological agent are immobilized thereon.

112. A support according to Claim 103, wherein a salt; a complex between a positively charged substance and a negatively charged substance; and an actin-like acting substance are immobilized thereon together with a cell and a biological agent.

113. A support according to Claim 103, wherein a salt; a complex between a positively charged substance and a negatively charged substance; and an actin-like acting substance are immobilized thereon together with a cell and a biological agent, in an array format.

114. A support according to Claim 104, wherein a salt, a gene introduction reagent, and an actin-like acting substance, a nucleic acid molecule, and a cell are immobilized thereon in an array format.

115. A support according to Claim 114, wherein the salt is selected from the group consisting of calcium chloride, sodium hydrogen phosphate, sodium hydrogen carbonate, sodium pyruvate, HEPES, calcium chloride, sodium chloride, potassium chloride, magnesium sulfide, iron nitrate, amino acids, and vitamins.

116. A support according to Claim 114, wherein the gene introduction reagent is selected from the group consisting of cationic polymers, cationic lipids, polyamine-based reagents, polyimine-based reagents, calcium phosphate, oligofectamine and oligofecter.

117. A support according to Claim 114, wherein the actin-like acting substance comprises at least one protein selected from the group consisting of fibronectin, laminin, and vitronectin, or a variant or fragment thereof.

118. A support according to Claim 114, wherein the nucleic acid molecule comprises a sequence encoding a protein selected from the group consisting of cytokines, hormones, cell adhesion molecules, cytoskeleton proteins and enzymes.

119. A support according to Claim 114, wherein the cell comprises a cell selected from the group consisting of an animal cell, an insect cell, a plant cell, a bacterial cell and a fungal cell.

120. A support according to Claim 114 wherein material of said support comprises material selected from the group consisting of glass, silica and plastics.

121. A method for producing a support comprising a plurality of cells immobilized thereon and capable of maintaining the cells in a consistent environment, comprising the steps of:

　　　　A) providing a support; and

B) immobilizing a cell to the support using a complex comprising a salt, a positively-charged substance and a negatively-charged substance.

5 122. A method according to Claim 121, wherein said step of immobilizing comprises immobilizing a mixture of the salt, a gene introduction reagent as the positively-charged substance , an actin-like acting substance, a nucleic acid molecule as the negatively-charged substance, and the cell
10 in an array format.

123. A method according to Claim 121, said step of immobilizing comprises a printing step.

15 124. A method according to Claim 121, wherein the step of providing the support comprises the step of producing the support from a support material.

125. An apparatus for producing a support comprising a
20 plurality of cells immobilized thereon and capable of maintaining the cells in a consistent environment, comprising:

A) means for providing a support; and

B) means for immobilizing a cell to the support using
25 a complex comprising a salt, a positively-charged substance and a negatively-charged substance.

126. An apparatus according to Claim 125, wherein said means for immobilizing comprises means for printing.

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127. An apparatus according to Claim 125, wherein the means for providing the support comprises means for shaping the support from a support material.

5 128. A method for producing a digital cell, comprising the steps of:

a) obtaining a cell parameter specifying a cell of experimental interest;

b) obtaining an environment parameter specifying an environment under which the cell specified by the cell parameter is cultured;

c) obtaining a stimulus parameter specifying a stimulus to be given to the cell specified by the cell parameter;

d) obtaining a stimulus response result showing a result which the cell specified by the cell parameter responds to the stimulus specified by the stimulus parameter under the environment specified by the environment parameter;

e) producing an experimental data for the cell, by correlating the cell parameter, the environment parameter, the stimulus parameter and the stimulus response result; and

f) optionally repeating steps a) through e) to produce at least one collection of experimental data for the cell, and to provide the at least one collection of experimental data as a digital cell.

129. A method according to Claim 128, wherein the environment parameter comprises a parameter indicating

culture medium in which the cell is cultured, and a parameter showing the conditions of the culture medium.

130. A method according to Claim 128, wherein the stimulus parameter comprises a parameter showing a reporter and a parameter showing a chemical stimulus.

131. A method according to Claim 128, wherein said stimulus response result comprises profile data for the cell obtained by monitoring a biological agent or a collection thereof on or in the cell over time.

132. A method according to Claim 128, further comprising the step of storing the digital cell to a database.

133. An apparatus for producing a digital cell, comprising:

a) means for obtaining a cell parameter specifying a cell of experimental interest;

b) means for obtaining an environment parameter specifying an environment under which the cell specified by the cell parameter is cultured;

c) means for obtaining a stimulus parameter specifying a stimulus to be given to the cell specified by the cell parameter;

d) means for obtaining a stimulus response result showing a result which the cell specified by the cell parameter responds to the stimulus specified by the stimulus parameter under the environment specified by the environment parameter;

e) means for producing an experimental data for the

cell, by correlating the cell parameter, the environment parameter, the stimulus parameter and the stimulus response result; and

f) means for providing at least one collection of
5   experimental data as a digital cell, by optionally repeating steps performed by the means a) through e) to produce at least one collection of experimental data for the cell.

134. A method for providing a service which reproduces an
10   experimental result of an actual cell using a digital cell by means of a computer system comprising service a requester and a service provider, comprising the steps of:

preparing a database having at least one digital cell stored thereon, wherein the at least one digital cell is
15   expressed as a collection of at least one experimental data of a cell of experimental interest, wherein each of the at least one experimental data comprises a cell parameter specifying the cell, an environment parameter specifying an environment under which the cell specified by the cell
20   parameter is culture, a stimulus parameter specifying a stimulus to be given to the cell specified by the cell parameter, and a stimulus response result showing a result which the cell specified by the cell parameter responds to the stimulus specified by the stimulus parameter under the
25   environment specified by the environment parameter;

receiving the cell parameter, the environment parameter and the stimulus parameter by the service requester to produce a request comprising the cell parameter, the environment parameter and the stimulus parameter;
30   providing the request to the service provider by the

service requester;

     searching the database in response to the request by the service provider to determine whether or not there is the stimulus response result relating to the cell parameter,

5   the environment parameter and the stimulus parameter included in the request, in the database;

     providing the stimulus response result to the service requester by the service provider, when it is determined that the stimulus response result relating to the cell

10   parameter, the environment parameter and the stimulus parameter included in the request exists in the database; and

     presenting the stimulus response result by the service requester.

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135. A method for providing a service for reproducing an experimental result of an actual cell using a digital cell, by means of a computer system comprising a service requester and a plurality of service providers, comprising the steps

20   of:

     preparing a plurality of databases, each having at least one digital cell stored thereon, wherein the at least one digital cell is expressed as a collection of at least one experimental data of a cell of experimental interest,

25   wherein each of the at least one experimental data comprises a cell parameter specifying the cell, an environment parameter specifying an environment under which the cell specified by the cell parameter is culture, a stimulus parameter specifying a stimulus to be given to the cell

30   specified by the cell parameter, and a stimulus response

result showing a result which the cell specified by the cell parameter responds to the stimulus specified by the stimulus parameter under the environment specified by the environment parameter;

5   preparing a service registry which stores at least one service capable of being provided by the plurality of service providers;

receiving the cell parameter, the environment parameter and the stimulus parameter by the service
10   requester to produce a request comprising the cell parameter, the environment parameter and the stimulus parameter;

searching the service registry in response to the request by the service requester to determine whether or not there exists a service provider capable of providing
15   a service for the request amongst the plurality of service providers;

providing the request to the service provider by the service requester when it is determined that a service provider capable of providing a service of the request
20   amongst the plurality of service providers exists;

searching the database in response to the request by the service provider to determine whether or not there is the stimulus response result relating to the cell parameter, the environment parameter and the stimulus parameter
25   included in the request in the database;

providing the stimulus response result to the service requester by the service provider, when it is determined that the stimulus response result relating to the cell parameter, the environment parameter and the stimulus
30   parameter included in the request exists in the database;

and

 presenting the stimulus response result by the service requester.

5 136. A computer system for providing a service which reproduces an experimental result of an actual cell using a digital cell, comprising:

 a service requester being composed such that it can have access to a database having at least one digital cell

10 stored thereon, each of the at least one digital cell is expressed as a collection of at least one experimental data of a cell of experimental interest, wherein each of the at least one experimental data comprises a cell parameter specifying the cell, an environment parameter specifying

15 an environment under which the cell specified by the cell parameter is cultured, a stimulus parameter specifying a stimulus to be given to the cell specified by the cell parameter, and a stimulus response result showing a result which the cell specified by the cell parameter responds to

20 the stimulus specified by the stimulus parameter under the environment specified by the environment parameter; and

 a service provider requesting a service desired by a user;

 wherein the service requester comprises:

25 means for receiving the cell parameter, the environment parameter and the stimulus parameter to produce a request comprising the cell parameter, the environment parameter and the stimulus parameter; and

 means for providing the request to the service

30 provider, and

wherein the service provider comprises:

means for searching the database in response to the request by the service provider to determine whether or not there is the stimulus response result relating to

5   the cell parameter, the environment parameter and the stimulus parameter included in the request in the database; and

means for providing the stimulus response result to the service requester by the service provider,

10   when it determined that the stimulus response result relating to the cell parameter, the environment parameter and the stimulus parameter included in the request exists in the database;

wherein the service requester further comprises

15   means for presenting the stimulus response result by the service requester.

137.   A computer system according to Claim 136 wherein the service requester is a Web browser which the user operates,

20   and the service provider is a Web server linked to the service requester via the Internet.

138.   A computer system according to Claim 136, wherein the service requester provides the request to the service

25   provider in a format described in XML language.

139.   A computer system according to Claim 136, wherein the service provider provides the stimulus response result to the service requester in a format described in XML language.

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140. A computer system for providing a service which reproduces an experimental result of an actual cell using a digital cell, comprising:

a plurality of service providers, each composed such
5   that the plurality of service providers can have access to a database having at least one digital cell stored thereon, each of the at least one digital cell is expressed as a collection of at least one experimental data of a cell of experimental interest, wherein each of the at least one
10   experimental data comprises a cell parameter specifying the cell, an environment parameter specifying an environment under which the cell specified by the cell parameter is cultured, a stimulus parameter specifying a stimulus to be given to the cell specified by the cell parameter, and a
15   stimulus response result showing a result which the cell specified by the cell parameter responds to the stimulus specified by the stimulus parameter under the environment specified by the environment parameter;

a service registry which stores at least one service
20   which the plurality of service providers can provide; and

a service provider requesting a service desired by a user;

wherein the service requester comprises:

means for receiving the cell parameter, the
25   environment parameter and the stimulus parameter to produce a request comprising the cell parameter, the environment parameter and the stimulus parameter;

means for searching the service registry in response to the request by the service requester to determine
30   whether or not there exists a service provider capable of

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providing a service of the request amongst the plurality of service providers and

means for providing the request to the service provider by the service requester when it is determined that there exists a service provider capable of providing a service of the request amongst the plurality of service providers,

wherein each of the plurality of service providers comprises:

means for searching the database in response to the request by the service provider to determine whether or not there is the stimulus response result relating to the cell parameter, the environment parameter and the stimulus parameter included in the request in the database; and

means for providing the stimulus response result to the service requester by the service provider, when it is determined that the stimulus response result relating to the cell parameter, the environment parameter and the stimulus parameter included in the request exists in the database;

wherein the service requester further comprises

means for presenting the stimulus response result by the service requester.

141. A computer system according to Claim 140, wherein the service requester is a Web server connected to a Web browser which the user operates via the Internet, and each of the plurality of service providers is a Web server connected to the service requester via the Internet.

142. A computer system according to Claim 140, wherein the service requester provides the request to the service provider in a format described in XML language.

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143. A computer system according to Claim 140, wherein the service provider provides the stimulus response result to the service requester in a format described in XML language.

10   144. A method for producing the profile data relating information of a cell, comprising the steps of:

    a) immobilizing and locating a cell on a support; and

    b) monitoring a biological agent or a collection thereof on or in the cell to produce the profile data for
15   the cell.